

WHAT IS CLAIMED IS:

1. A binding complex for delivering DNA/RNA into cytoplasm or nucleus, comprising a fusion protein of PTD with one or more homologous or heterologous binding
5 protein having DNA/RNA binding factor or DNA/RNA binding domain; a DNA/RNA binding sequence which is specifically bound to the DNA/RNA binding factor or DNA/RNA binding domain; and a DNA/RNA encoding biological regulator
2. The binding complex according to claim 1, wherein NLS (Nuclear
10 Localization Sequence) is additionally combined with PTD of fusion protein.
3. The binding complex according to claim 1 or claim 2, wherein PTD is selected from the group consisting of Mph-1, Sim-2, Tat, R7, VP22, ANTP, MTS, Pep-1, and Pep-2.
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4. The binding complex according to claim 1 or claim 2, wherein the biological regulator is a promoter or enhancer that express a gene specifically in specific species, tissues, organs or cells.
- 20 5. The binding complex according to claim 4, wherein the promoter is an inducible promoter or enhancer.
6. The binding complex according to claim 1 or claim 2, wherein the complex is delivered into cytoplasm or nucleus through routes including intramuscular,

intraperitoneal, intravein, oral, nasal, subcutaneous, intradermal, mucosal or inhalation.

7. A method for delivering a biological regulator into eukaryotic or prokaryotic cytoplasm or nucleus, comprising steps:

- 5 i) Preparing peptide transducing recombinant expression vector which comprises a DNA encoding PTD, a DNA encoding one or more homologous or heterologous binding protein having DNA/RNA binding factor or DNA/RNA binding domain, and expression regulatory sequence operatively bound to the vector;
- ii) Obtaining a fusion protein by expression of the vector of step i) in a host cell;
- 10 iii) Obtaining binding complex by binding of one or more biological regulators selected from the group consisting of fusion protein of step ii), protein, DNA/RNA, fat, carbohydrate and chemicals by chemical or physical covalent or non-covalent bond; and
- iv) Mixed-culturing the binding complex of step iii) with cell cultures *in vivo* or *ex vivo* through routes including intramuscular, intraperitoneal, intravein, oral, nasal,
- 15 subcutaneous, intradermal, mucosal or inhalation.

8. A method for delivering a biological regulator into eukaryotic or prokaryotic cytoplasm or nucleus, comprising steps:

- i) Preparing peptide transducing recombinant expression vector which comprises a
- 20 DNA encoding PTD, a DNA encoding one or more homologous or heterologous binding protein having DNA/RNA binding factor or DNA/RNA binding domain, and expression regulatory sequence operatively bound to the vector;
- ii) Obtaining a fusion protein by expression of the vector of step i) in a host cell;

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iii) Preparing a recombinant expression vector which comprises a DNA encoding a biological regulator, a DNA/RNA binding sequence specifically binding to the DNA/RNA binding factor or the DNA/RNA binding domain, and expression regulatory sequence bound operatively to the vector;

5 iv) Obtaining a binding complex by combining the fusion protein from step ii) with the recombinant expression vector from step iii); and

 v) Mixed-culturing the binding complex of step iv) with cell cultures *in vivo* or *ex vivo* through routes including intramuscular, intraperitoneal, intravein, oral, nasal, subcutaneous, intradermal, mucosal or inhalation.

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9. The method according to claim 7 or claim 8, wherein step ii) comprises an additional step combining NLS (Nuclear Localization Sequence) with PTD of fusion protein.

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10. Protein transducing recombinant expression vector, wherein comprises a DNA encoding PTD, a DNA encoding one or more homologous or heterologous binding protein, and expression regulatory sequence bound operatively to the vector.